

Professionals

[Home](#)

Featured Resources »

[Academy CAN!](#)

[Ask the Expert](#)

[Become a Member](#)

[Careers in A/I](#)

[Job Placement Center](#)

[New Research](#)

[School Tools](#)

[Donate to the
ARTrust](#)

Proper techniques for the administration of inhaled medications to treat asthma

2/2/2011

Q. I am teaching my nursing students about inhaled medications. When a patient has more than one inhaler prescribed for different purposes what is the correct order to administer inhalers? Do I teach steroidal first, broncho dialator second etc.? In addition, how far apart should inhalers be spaced if they are different inhaled medications versus 2 puffs of the same medication? Thanks for your time.

A. Thank you for your recent inquiry.

There are no well-documented, definitive answers to your questions. However, the literature has dealt with this issue to some extent.

First, it is doubtful that the order of administration regarding the types of inhalers used makes a great deal of difference. It has been postulated that bronchodilators should be administered prior to inhaled corticosteroids based on the rationale that "opening the bronchial tubes" would permit enhanced deposition of an inhaled corticosteroid. However, adequate bronchodilation takes time. It is usually not achieved until 15 to 20 minutes after the inhalation of a short acting bronchodilator or formoterol and takes longer after salmeterol.

This is usually inconvenient and impractical, and in addition, there is no strong evidence in the literature to suggest that it alters the outcome of treatment favorably. Thus, the order of the administration of two inhalers of different types is of little importance.

As far as the interval between puffs, one to two minutes is usually adequate for all inhalers regardless of whether or not you are taking a second puff of the same inhaler or using a inhaler containing a different drug. One minute is usually considered the minimal wait, and two minutes is certainly adequate as far as the mechanics are concerned.

However, in terms of the use of bronchodilators for treatment of bronchoconstriction, a second issue enters the consideration. Since, as noted, bronchodilation takes a few minutes, one cannot actually tell whether one needs a second inhalation by simply waiting one or two minutes. Thus it is suggested that a second inhalation be taken, if needed, in five to 20 minutes. This of course does not apply for drugs which have a slow onset of action such as inhaled corticosteroids.

So, in summary:

There is no definitive evidence to indicate there is any advantage in using one type of inhaler before the other.

For most inhalers, a wait time of one to two minutes is sufficient.

For a bronchodilator, one might wish to wait 5 to 20 minutes to see if a second inhalation is needed for further bronchodilation.

Thank you again for your inquiry and we hope this response is helpful to you.

J Asthma. 2009 Feb;46(1):25-9.

Determining the time to maximal bronchodilator response in asthmatic children.

Stavreska V, Verheggen M, Oosttryck J, Stick SM, Hall GL.
Respiratory Medicine Department, Princess Margaret Hospital for Children, Perth,
Australia.

Abstract

BACKGROUND: The interval between bronchodilator administration and post-bronchodilator lung function testing is critical for accurate interpretation of the bronchodilator response. The time course of this response in children is not well documented. We aimed to document the time taken to achieve maximal lung function following salbutamol inhalation.

METHODS: Eighteen asthmatic children between 7 and 18 years of age with a history of bronchodilator responsiveness were recruited. Spirometry was performed before and at 0, 10, 15, 20, 40, 60, and 90 minutes after salbutamol inhalation 600 microg (Ventolin; GlaxoSmithKline) via a spacer (Volumatic; GlaxoSmithKline).

RESULTS: Spirometric indices significantly increased after salbutamol inhalation ($p < 0.001$). The group median time to maximal response in forced expiratory volume in 1 second (FEV(1)) was 17.5 (10-60: 10th-90th centiles) minutes after salbutamol. The magnitude of group response in FEV(1) was significantly higher at 15 and 20 minutes than at 0 and 10 minutes post-salbutamol inhalation (repeat measures analysis of variance [ANOVA] on ranks; $p < 0.05$).

CONCLUSION: We conclude that a minimal interval of 20 minutes, before re-testing spirometry, is required to document the maximal response to bronchodilators in the majority of asthmatic children.

PMID: 19191133 [PubMed - indexed for MEDLINE]

Sincerely,
Phil Lieberman, M.D.

Key Words: inhaled medications, bronchodilators, inhaled bronchodilators, inhaled corticosteroids, asthma, asthma treatment, inhaler technique

[Back](#)